CLAIMS

1.   A honeycomb structure comprising a plurality of cells, each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a

5   plugging material at one end face, remaining cells being plugged by the plugging material at the other end face, wherein a Young's modulus of the plugging material is lower than that of the cell wall.

2.   The honeycomb structure according to claim 1, wherein

10   a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.

3.   The honeycomb structure according to claim 1, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.

15   4.   The honeycomb structure according to any of claims 1 to 3, wherein the porosity of the cell wall is 46% or more.

5.   The honeycomb structure according to any of claims 1 to 4, wherein a thickness of the cell wall is 400 μm or less.

6.   The honeycomb structure according to any of claims 1

20   to 5, wherein a material for the cell wall is porous ceramic.

7.   The honeycomb structure according to any of claims 1 to 6, wherein the plugging material comprises silicon carbide.

8.   The honeycomb structure according to any of claims 1

25   to 7, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns at the end faces.

9.   A honeycomb structure comprising a plurality of cells,

each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a plugging material at one end face, remaining cells being plugged by the plugging material at the other end face,

5   wherein a strength of the plugging material is lower than that of the cell wall.

10.   The honeycomb structure according to claim 9, wherein a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.

10   11.   The honeycomb structure according to claim 9, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.

12.   The honeycomb structure according to any of claims 9 to 11, wherein the porosity of the cell wall is 46% or more.

15   13.   The honeycomb structure according to any of claims 9 to 12, wherein a thickness of the cell wall is 400μm or less.

14.   The honeycomb structure according to any of claims 9 to 13, wherein a material for the cell wall is porous

20   ceramic.

15.   The honeycomb structure according to any of claims 9 to 14, wherein the plugging material comprises silicon carbide.

16.   The honeycomb structure according to any of claims 9

25   to 15, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns at the end faces.

17.   A honeycomb structure comprising a plurality of cells,

each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a plugging material at one end face, remaining cells being plugged by the plugging material at the other end face,

5   wherein a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.

18.   The honeycomb structure according to claim 17, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.

10   19.   The honeycomb structure according to claim 17 or 18, wherein the porosity of the cell wall is 46% or more.

20.   The honeycomb structure according to any of claims 17 to 19, wherein a thickness of the cell wall is 400 μm or less.

15   21.   The honeycomb structure according to any of claims 17 to 20, wherein a material for the cell wall is porous ceramic.

22.   The honeycomb structure according to any of claims 17 to 21, wherein the plugging material comprises silicon

20   carbide.

23.   The honeycomb structure according to any of claims 17 to 22, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns

25   at the end faces.